

CLAIMS

1. A method for optimizing supply modulation in a transmitter, comprising:

providing a signal to be transmitted, the signal having an envelope;

providing a modulation signal to a power regulator, the power regulator for providing a supply voltage to a radio frequency power amplifier (RFPA), the modulation signal substantially corresponding to the envelope of the signal to be transmitted;

comparing an actual signal to be transmitted with an expected signal at some point in the transmitter; and

adjusting the modulation signal in response to detecting a deviation of the actual signal to be transmitted from the expected signal.

2. A method for optimizing supply modulation as defined in claim 1, further comprising linearizing the signal to be transmitted.

3. A method for optimizing supply modulation as defined in claim 2, wherein the linearizing comprises linearizing by cartesian feedback.

4. A method for optimizing supply modulation as defined in claim 3, wherein the comparing comprises comparing reference baseband signals with summed baseband signals.

5. A method for optimizing supply modulation as defined in claim 1, wherein the comparing comprises comparing a low level RF

signal with an amplified RF signal at the input and output,
respectively, of the RFPA.

6. A method for optimizing supply modulation as defined in
5 claim 1, wherein the comparing is performed by a digital signal
processor.

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7. A transmitter for optimizing a supply modulation, comprising:

a radio frequency power amplifier (RFPA) for amplifying a low level RF signal and providing an amplified RF signal;

5 a power supply for providing power to the RFPA in correspondence with a modulation signal supplied to the power supply;

10 a means for generating an envelope of a signal to be transmitted and providing the modulation signal to the power supply, the modulation signal substantially corresponding to the envelope of the signal to be transmitted; and

a means for comparing an actual signal to be transmitted with an expected signal at some point in the transmitter;

15 wherein the modulation signal is adjusted in response to detecting a deviation of the actual signal to be transmitted from the expected signal.

20 8. A transmitter for optimizing a supply modulation as defined in claim 7, further comprising means for linearizing the signal to be transmitted.

25 9. A transmitter for optimizing a supply modulation as defined in claim 8, wherein the means for linearizing comprises cartesian feedback.

30 10. A transmitter for optimizing a supply modulation as defined in claim 9, wherein the means for comparing compares reference baseband signals with summed baseband signals in the transmitter.

11. A transmitter for optimizing a supply modulation as defined in claim 7, wherein the means for comparing compares a low level RF signal with an amplified RF signal at the input and output, respectively, of the RFPA.

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12. A transmitter for optimizing a supply modulation as defined in claim 7, wherein the means for comparing comprises a digital signal processor.

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13. A method of modulating a supply voltage supplied to a radio frequency power amplifier in a transmitter, comprising:

providing a signal to be transmitted, the signal having an envelope;

5 providing a modulation signal to a power regulator, the power regulator for providing the supply voltage, the modulation signal substantially corresponding to the envelope of the signal to be transmitted; and

adjusting the modulation signal to avoid excess gain
10 compression at a gain stage of the transmitter.

14. A method of modulating a supply voltage as defined in claim 13, further comprising linearizing the signal to be transmitted.

15. A method of modulating a supply voltage as defined in claim 14, wherein the linearizing comprises linearizing by Cartesian feedback.

20 16. A method of modulating a supply voltage as defined in claim 15, wherein the comparing comprises comparing reference baseband signals with summed baseband signals.

25 17. A method of modulating a supply voltage as defined in claim 13, wherein the comparing comprises comparing a low level RF signal with an amplified RF signal at the input and output, respectively, of the RFPA.

30 18. A method of modulating a supply voltage as defined in claim 13, wherein the comparing is performed by a digital signal processor.